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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •



MARCH 14, 1936

To Look at Worlds Apart

See Page 168

SCIENCE SERVICE PUBLICATION

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The Weekly  Summary of

Current Science

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DO YOU KNOW?

Oysters mature to a marketable state in two to four years.

Tapioca is now being produced in bright colors such as red and green.

Twelve gopher snakes that arrived from Texas at the New York Zoo one January were frozen stiff but six thawed and survived.

The fifth edition of the U. S. Pharmacopeia, published in 1870, contained only three synthetic drugs—chloroform, chloral, and iodoform.

With greater use of artificial light and heat in flower growing, an electrical company predicts that greenhouses will take a skyscraper turn.

Inspections have showed that if glasses at roadside stands are improperly washed, there may remain 50,000 to 100,000 bacteria on a glass.

Goat's milk is far more widely used than most people think, says a farm scientist, for there are over 5,000,000 milk goats in the United States alone.

Political office seekers are called candidates because in ancient Rome such persons wore white linen togas and were given a name from the Latin *candidus*, white.

Potatoes are as rich in Vitamin C as tomato juice.

The United States "nickel" is really 75 per cent. copper.

Another industry has learned a use for its waste: apple growers find that waste apples yield calcium gluconate, used in medicine.

Pre-school children are often burdened with clothing equal to one-tenth their weight, whereas an average adult wears five pounds or less.

A green leaf contains three color pigments—green, yellow, and orange, but the latter two do not show until the changes of autumn occur.

A new sweet corn for the South, developed in Texas, is so able to resist drought that a fair crop of roasting ears was reported when no rain fell from planting to harvest.

Why an occasional "idiot genius" can perform wonderful feats of memory or solve problems with lightning speed, although otherwise his mind is below normal, is explained by one physician: the individual's mind runs on a single track, and, as he is not distracted by other interests, he achieves conspicuous results in his chosen line.

WITH THE SCIENCES THIS WEEK

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PHYSIOLOGY

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PHYSICS-BIOLOGY

Neutrons, Tool of Physics, Deadly Biological Menace

Warning That New Potential Danger to Experimenters
Exists in Rays Ten Times More Potent Than X-Rays

DEADLY danger to young research workers in physics lies in wait in their own laboratories, if they work with powerful new atom-smashing machines using streams or rays of neutrons.

Neutrons are the uncharged particles of matter which can be knocked out of the cores of atoms. They are widely used as atomic "bullets" to pierce the inner nuclei of other atoms and are capable of effecting transmutation of the elements and synthetic radioactivity.

Warning of the potential danger in using such neutron rays is drawn from the results of two investigations on their biological effects, which have just been published (*Proc. Nat. Acad. Sci.*, February). The neutron rays appear, in summary, to be ten times more potent than X-rays in what they can do to the body.

In the first research carrying its warning to scientists neutron rays were used on white rats. It was presented by two brothers, Dr. John H. Lawrence of Yale University School of Medicine, and Prof. Ernest O. Lawrence of the University of California, who built the large cyclotron apparatus with which the neutron rays can be produced. The second, in which neutrons were shot at just-sprouting grains of wheat, was the work of Dr. Raymond E. Zirkle of the University of Pennsylvania and Dr. Paul C. Aebersold of the University of California Medical School.

Exposure to neutron rays was deadly to white rats. They grew sick, miserable-looking, humped-up, and died. The rays were apparently bad for them "all over," but as a quantitative measure of their effect, the decrease in the number of the necessary white blood corpuscles in their blood was counted. It was found that destruction of white blood cells was as great from a given dose of neutron rays as it was from a ten times more intense dose of X-rays, heretofore counted among the really dangerous scientific tools. The effects of neutron rays on growing plant tissue were found by Drs. Zirkle and Aebersold to follow about the same ratio: neutron rays are ten times as dangerous as X-rays.

Commenting on their results, the Doctors Lawrence stated:

"This should constitute a warning inasmuch as many laboratories will soon be using neutron generators of such power that individuals in the vicinity of the apparatus will be exposed to many times the allowable dosage in the course of a few minutes unless adequate protective screening is provided." They set the "allowable dosage" at just one-tenth the intensity of X-ray exposure that workers can stand without permanent damage to their health.

If the present warning is heeded by the enthusiastic scientists in the universities now setting up apparatus for producing neutrons, the world may be spared the tragedies that followed the discovery of X-rays in the late 1890s,

and of radium early in the present century.

Not knowing the deadliness of the then new rays to living cells, many of the early workers were severely burned, and even maimed for life, through reckless exposure. Even yet, there are veteran X-ray technicians in scientific laboratories and medical clinics whose hands are seriously damaged—unwitting victims of the two-edged tool they used in their younger days.

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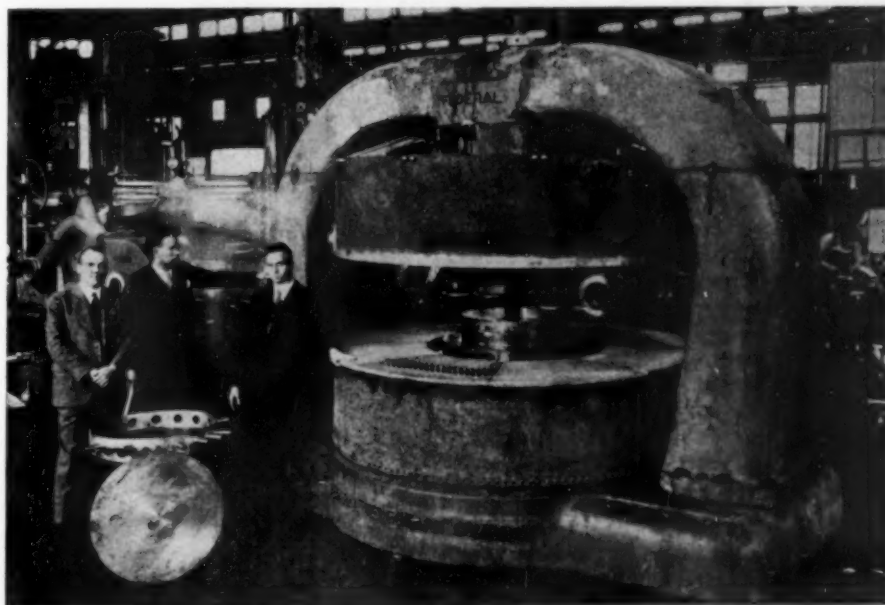
PUBLIC HEALTH

Respirators Cannot Take Place of Dust Control

THE RECENT furor concerning alleged deaths from silicosis at Gauley Bridge, West Virginia, has increased the demand for a better dust respirator which workmen may use when exposed to the dangerous quartz and silica dust.

Says Dr. Philip Drinker of Harvard University, who is the inventor of the artificial "lung" known as the Drinker respirator:

"Some firms, driven panicky by the present silicosis-dust racket, have even gone so far as to stock up with 'ap-



DANGER TO SCIENTISTS

The giant 85-ton cyclotron atom smashing apparatus of Prof. E. O. Lawrence at the University of California, Berkeley, Calif. Across its 45-inch diameter pole pieces scientists create magnetic fields tens of thousands of times as powerful as those of the earth, for use in experiments with neutrons and problems of transmutation of the elements and artificial radioactivity. The men, left to right are: C. U. Foulds, Prof. E. O. Lawrence and Dr. M. S. Livingston. The piercing radiation from this apparatus and other similar ones now under construction throughout the nation is exceedingly dangerous to unprotected scientists near it. Mounds of earth and tanks of water are two protective methods suggested to shield workers from the menace of such potent rays.

proved' respirators so that they might be able to show they have on hand the best respirators made in case they find themselves defending a dust-compensation lawsuit."

In a report to the American Society of Mechanical Engineers (*Mechanical Engineering*, March) Dr. Drinker further points out:

"It can be said of all the mechanical-filter-type or dust respirators that they are a poor substitute for dust control. Ultimately it is not an economy to supply workmen with air-line respirators or with dust respirators instead of installing the proper dust-control equipment. Further, the time is not far off

when the courts and compensation boards will make short shrift of the employer who lets his men work in dense clouds of dust, regardless of what the dust is.

"In general the employer would do well to try some of the dusty jobs himself, wear the men's respirators, and thus decide whether or not it would be better to install dust control instead of respirators. However, dust respirators are centuries old; they have a legitimate place in industry, and are an important aid in the prevention of dust inhalation, but they are not a substitute for dust prevention and never should be used as such."

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PHYSIOLOGY

Sense of Smell Measured With Simple New Instrument

Brain Tumors Located Through Differences In Patients' Abilities to Discern Odors

HOW WELL do you smell? Eye specialists can measure your acuity of vision and ear specialists have ways of estimating how well you hear, but until now there has been no way of telling how good your nose is at detecting odors.

Now, however, a three-man scientific team at the Neurological Institute of Columbia University have worked out a simple apparatus that gives a quantitative expression of how well you smell, and also how soon your nose gets tired of the steady presence of an odor and refuses to register it any longer. The three men are Drs. Charles A. Elsberg, Irwin Levy, and Earl D. Brewer, and they describe their apparatus and its use in some detail (*Science*, Feb. 28).

Device Simple

The "smell-measurer" (olfactometer might do for a nice, learned-sounding name) is simple in the extreme. It consists merely of a bottle containing the odorous substance under test, with an inlet tube through which air can be forced, and an outlet tube leading up to a nosepiece. The latter branches, Y-fashion, so that each nostril has its separate source of odor-bearing air. Either branch of the Y can be shut off, so that the nostrils can be tested individually as well as both together.

The person being tested puts on the

nosepiece and holds his breath, and one of the experimenters shoots a measured quantity of air into the odor reservoir with a syringe. What the experimenters have called the "minimum identifiable odor" (short-handed as M.I.O.) is measured in terms of the smallest number of cubic centimeters of air needed before the subject can detect an odor. This procedure is called the "blast test."

Another Test

Besides this test, the three researchers have another, which they call the "stream test." In this, the subject breathes through his mouth, while a steady stream of odor-bearing air is blown into his nose through the apparatus. This can be done until a "fatigue point" is reached—the human smelling mechanism just quits registering, though the odor is still present. Then, after a rest period, the blast test is made again, to determine the degree of recovery.

The three doctors have made a practical clinical use of their apparatus, as an indirect means of exploring for brain tumors. The brain lobes where the sense of smell is centered are at the very front of the brain, and pressure anywhere within the brain affects them. They behave differently, however, according to the direction from which the pressure comes, so that by studying these differences in smell-sense response it is pos-

sible to make an approximate location of the tumor that is causing the pressure.

At the recent meeting of the American College of Physicians, Dr. Elsberg reported on this use of differing levels in odor perception as a tool in brain-tumor diagnosis. Results of over 100 such diagnoses have also been reported, (*Bulletin of the Neurological Institute*, December, 1935)

In these tests, Dr. Elsberg and his colleagues used two odorous substances, a chemical known as citral, and common coffee. The patient's sensitivity was first established by the "blast test," separately for each nostril. Then the fatigue points for each nostril was determined by the "stream test." Comparing these values with those for healthy persons with normal noses and olfactory brain centers and nerves, Dr. Elsberg can tell whether the patient has a tumor in any of several parts of his brain.

He does not believe the method has been tried long enough to warrant using it exclusively in diagnosing brain tumors, but he thinks it should be investigated.

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PSYCHOLOGY-PHYSIOLOGY

Most First Grade Children Not Ready to do Reading

THE eye troubles of school children would be relieved if the schools did not try to teach reading until the child is physically and mentally ready to learn, Dr. Paul A. Witty, of Northwestern University, told the meeting of the American Educational Research Association.

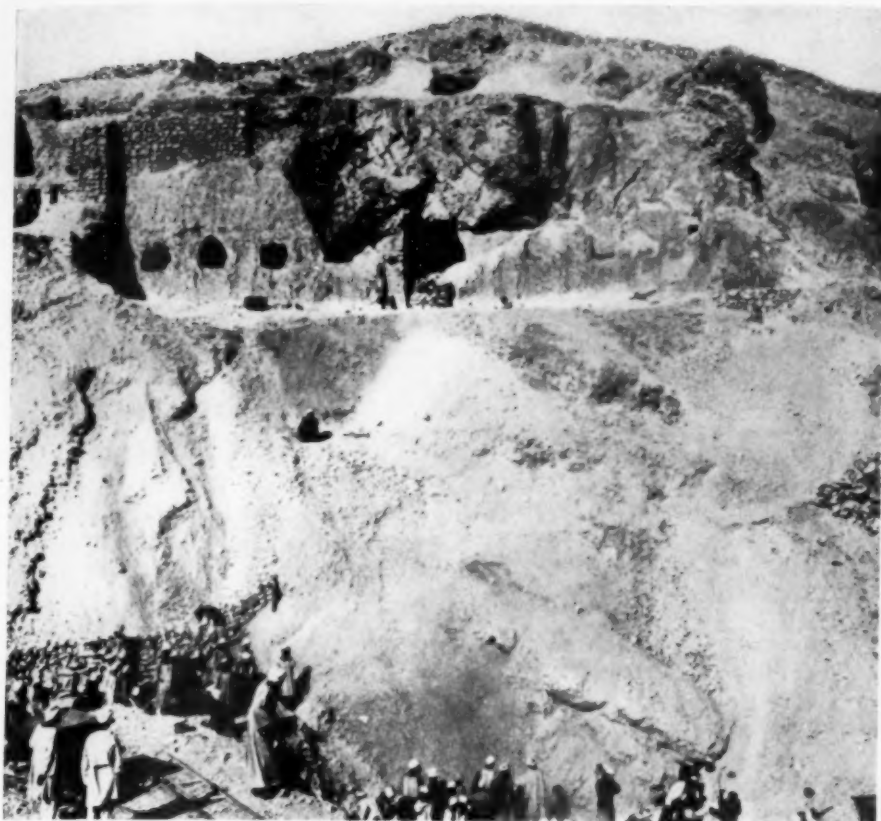
Examination will show that most first grade children and many second grade children are not ready to learn to read, Dr. Witty predicted. A test for measuring the child's background of interest and information, and his language and mental development, should be given to each child to determine this "readiness to learn." Each child when he enters school, and at regular intervals afterwards, should have his eyes carefully examined.

More than 40 out of each hundred children in grades 4 to 6 have serious eye defects, and the percentage is greater in the higher grades, Dr. Witty said.

These defects may not interfere with the child's reading ability.

But, on the contrary, learning to read before the body and mind are sufficiently developed may produce eye strain. Very few children have eye defects at the time they enter school.

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ANCIENT TOMBS

On this hillside where the Arab is squatting on the ground was found the burial place (still unopened when this picture was taken) of the father and mother of an Egyptian queen's favorite. Above at the summit was the sumptuous tomb of the favorite himself. In the ravine was found a mummy of the oldest horse ever discovered in Egypt. The photograph is an official one of the Metropolitan Museum of Art.

ARCHAEOLOGY

How Queen's Favorite Buried Relatives Revealed by Tomb

Self-Made Egyptian Architect Provided Luxuriously For Himself, But Gave Parents Modest Resting Place

HOW architect Sen-Mut, self-made Egyptian and queen's favorite, buried his not very important father and mother, is revealed in a new tomb discovery at Thebes just announced by the Metropolitan Museum of Art.

The tomb, which escaped plundering by robbers for over 3,400 years, was found intact when the archaeologists entered, says the first report from Ambrose Lansing, director of the Museum's Egyptian Expedition.

Clearing a ravine in front of the tomb, the expedition first made a surprising discovery of the mummy of a

horse wrapped for burial and placed in a huge coffin. This is probably the oldest horse discovered in Egypt, Mr. Lansing stated.

Egypt is believed to have first acquired horses when the Hyksos, or Shepherd Kings, invaded the land, bringing horses with them from the Near East.

The mummy horse is estimated a little later in date than these whirlwind invaders who ruled Egypt for over a century from about 1700 B.C.

When the archaeologists removed a slab of stone in the face of the ravine wall, they found themselves before a

small chamber crowded with funerary material. Reading the names on two coffins, they learned that the tomb of Ra-mose and Hat-nufer, father and mother of Sen-Mut, famous Egyptian architect and court official, has been found.

Although Sen-Mut held a long string of titles and honors as favorite of the feminist Egyptian Queen Hatshepsut, the tomb of his father and mother shows that they had no official titles. From this, the Egyptologists infer that ambitious Sen-Mut won Egypt's highest honors as a self-made man.

Partial to Mother

Sen-Mut gave his mother a first class burial, the explorers soon realized, but the father was not so well treated. His mother was provided with a Book of the Dead, a heart scarab, and a gilt mask. His father got none of these, and a poor sort of coffin besides. Neither, however, was rated important enough to have an individual tomb. Their little burial chamber was cut as a dependency of Sen-Mut's own sumptuous tomb with its public chapel.

Limestone chips, thrown into the ravine, deeply covered the entrance to the elderly couple's burial, thus protecting it from vandalism that wrecked so many Egyptian tombs.

The tomb which Sen-Mut built for himself, on the hilltop, is almost completely destroyed. The Egyptian Expedition is now re-investigating this tomb and its surroundings, since Sen-Mut's funerary arrangements have proved to be extraordinary. In 1927, the expedition found a second and secret tomb that the queen's favorite built for himself under the very court of a great temple he was building for his sovereign.

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A group of British scientists have formed a Society for the Study of Alchemy because of the historic interest the subject has for chemists.

RADIO

March 17, 3:15 p. m., E.S.T.
THE "IRISH" POTATO — Dr. F. J. Stevenson, United States Bureau of Plant Industry.

March 24, 3:15 p. m., E.S.T.
ARMING AGAINST DISEASE—Dr. J. P. Leake, Medical Director of the United States Public Health Service.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

CONSERVATION

Once More the Dust

"Invading Army" Relentlessly Destroying Productive Land is Closing in on Grain Belt From Three Sides

By PROF. PAUL B. SEARS, University of Oklahoma, Author of "Deserts on the March"

IMAGINE an invading army, relentlessly destroying productive farm lands, closing in on the grain belt from east, south, and west, and you will have a picture of the way wind and water are gnawing into the vitals of the United States. Beginning along the Atlantic coast, and across the southern Piedmont area, the progress of the invader has been marked by a belt of water-worn land, widening steadily since settlement. Land abandonment in New England is an old story. In the Piedmont area the disruption of balanced agriculture has dislocated population, throwing hordes of workers into industrial centers, affording a great reservoir of cheap labor, and creating problems faster than they can be solved.

Now the destroyer is closing in from the west, using wind as a weapon and signalling his advance in clouds of dust which reach literally into the high heavens. We have opened the gates to him by removing our own best defense—the eighteen inches of shortgrass turf which originally covered the high plains. This was done in a reckless gamble which makes the Mississippi Bubble seem like a penny-ante game. Since 1920 thousands of square miles of the shortgrass sod have been plowed by power machinery for the growing of wheat. So hazardous is this enterprise that, had the price been stabilized at a dollar a bushel, it would have been operated, on the average, without gain, because periods of drought are inevitable in this region. The native grass is adjusted to them, the wheat is not.

Russian Thistle Useless

Today there is much abandoned land, on which the principal weed, if there is any, is the Russian thistle, which affords absolutely no protection against the winds of winter and early spring. The wheat, on land which has been seeded, affords inadequate protection and is itself being blown out of the ground. The stubble where "bundle-feed" such as

Kaffir corn has been grown is being etched away. At the present time listed land, plowed into deep V-shaped furrows, seems to be fairly well protected. But there is some reason to believe that prolonged dry windy weather will start it to moving. The greatly reduced area of native sod, unless it has been very heavily grazed, remains stable, even on the looser soil types.

To those remote from this area the dust storms are novel, perhaps startling. Within two hundred miles of the Plains they are annoying and costly, causing enormous trouble to telephone companies, for example, to say nothing of housewives. But in the dust-area itself, the storms spell disaster, physical, economic, and social.

There is no magic formula for cure, any more than there would be if the advancing enemy were an army of humans. In that case we should have to rely upon the general staff for plans, and the army for their execution.

General Staff

We have today a general staff of scientists, above politics, and eminently practical—the Science Advisory Committee. To execute their recommendations we have appropriate arms of government, notably the Soil Conservation Service and the Forest Service. The Science Advisory Committee has already urged the joint cooperation of local, state, and federal agencies in the prevention of erosion. There is, however, great danger that are stricken communities will come to depend too much upon an overburdened government, not only for guidance and information, but for actual physical aid. This in the end would not solve the problem of reestablishing local equilibrium.

Nor is it amiss to suggest that manufacturers' associations and other powerful financial groups whose ultimate welfare depends upon farm prosperity would do well to enlist their technical and commercial resources actively in the struggle. If they used the energy which was available for stimulating and supplying farm markets during the period of expansion, it would go far towards insuring future markets.

We shall see increasing pressure for immediate, effective action. This is entirely proper, and is the concern of every citizen. It is estimated that the country will require an additional area of about 50,000,000 acres of crop land in the next three decades. We have none to waste, quite apart from the question of local prosperity in the suffering areas.

It is essential that whatever measures are advocated in the heat of emergency bear the stamp of approval of our scientific general staff, the Science Advisory Committee. The problem symbolized by the dust-storms is neither local nor temporary. It must be approached from the standpoint of permanent and national benefit.

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SURGERY

Fingers Replaced With Toes by Transplantation

REPLACING a highly valuable but missing finger with a relatively useless toe is the latest surgical feat reported by Prof. M. I. Kuslik, noted surgeon.

The woman patient, reports Prof. Kuslik (*Archives of Surgery*, January) had an unsightly stump in place of the index finger on the left hand as the result of an accident while tobogganing.

The operation consisted of removing the greater part of the second toe on the left foot and transplanting it on the finger stump. Five weeks in a plaster cast permitted the dissimilar parts to join. Photographs show the reconstructed finger in use.

As the *British Medical Journal* comments (Feb. 22) "the reconstruction both looks well and appears to be very serviceable."

Besides the increased utility the patient's mental state is much improved, states Prof. Kuslik.

Adds the *British Medical Journal*: "Prof. Kuslik's case is not the first of its kind, but appears to have been one of the most successful. Since 1897, when Nicoladoni first suggested the practicability of the transference, there have been numerous reported efforts, and up to 1930 Prof. Kuslik had been able to trace seventeen, two of which had been able colleagues of his in Russia.

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Unappreciated Spring Flower

SKUNK cabbage, which will be producing its purple noses out into the cold world in spite of lingering winter and reluctant spring, really has much to recommend it despite its name, doubly suggestive of unpleasant odors.

It is rather a gamin of a plant, to be sure; a bit rowdy in the appearance of its tough flowers, and later, in the mid-summer maturity of its huge lush leaves, perhaps something of a swashbuckler. Yet the very toughness of its flowers, defiant of the hardships attendant on precocious blossoming, ought to compel our admiration. And the phalanx of its great green leaves, packed in solid array over acres of bog, has a real element of beauty about it—at a little distance.

Be it remembered always, when you wrinkle your nose at the skunk cabbage, that you (or some other trampling animal blunderer) bear the real guilt of the offense. Like its striped-backed namesake, the skunk cabbage does not resort to its defensive chemical warfare unless first attacked. Its motto might well be that of the rattlesnake flag of Revolutionary fame: "Don't tread on me!"

The skunk cabbage is one of the most peculiar of plants, in that its flowers, leaves and fruits are all strangers to each other. Its thick club-shaped flower-spike, wrapped in its purplish-greenish "spathe," forces its way up through snow and ice of bogs in late February or early March.

After the flowers are gone, the great broad cabbage-like leaves appear, and reign during the summer. In their turn they pass, and then in autumn you may find the egg-shaped, spiky little foot-balls of the fruits, kicking around underfoot.

In the meantime, though, the leaves have done their work well, and safe

underground, in the wet muck of the bog, there is a well-packed array of starch-filled rootstocks, that carry the plant's hope of posterity through winter into another spring. Without this

stored solar energy there could not be the energetic defiance of frost which we have come to expect of the skunk cabbage.

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PHYSICS

Measure the Forces Between Cores of Hydrogen Atoms

MEASUREMENT of one of the fundamental forces of nature—the binding energy between the cores of two hydrogen atoms—was announced by Department of Terrestrial Magnetism of the Carnegie Institution of Washington. In nature these atom cores are so close together that 5,000 trillion of the groups of pairs could be placed side by side and only make an inch of length.

Within the nuclei of atoms, it was found, the forces are over seven and a half times as great as they are outside where the ordinary laws of force exist. Drs. M. A. Tuve, N. P. Heydenburg and L. R. Hafstad did the experimental work while Dr. Gregory Breit and Prof. E. U. Condon of the Institute for Advanced Study and Princeton University,

respectively, are now interpreting the theoretical meanings of the investigation.

Report of the atomic research (*Physical Review*, March 1) explains that the million-volt accelerating tube of the Carnegie Institution was the atomic "gun" which made the bombardment experiments possible. Hydrogen nuclei, called protons, were driven by the high energy of the tube into a chamber containing hydrogen gas at low pressure. Many of the proton bullets struck the hydrogen atoms and were deflected in a fashion somewhat comparable with the impact of two billiard balls. Using special collecting devices and a radio-amplifier, measurements of the scattering were obtained.

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PHYSIOLOGY

Doctors See Movies of Revived Human Hearts

HUMAN hearts made to beat again after their owners had died were seen on the moving picture screen by members of the American College of Physicians.

The hearts were revived—unfortunately too late to do their owners any good—by Dr. William B. Kountz of St. Louis, Mo. Dr. Kountz' object is to learn more about human hearts and how they function both in health and sickness so that he and other doctors will know how to keep hearts beating in sick persons and just what medicines to use for various ailments of heart and blood vessels.

So far Dr. Kountz has succeeded in making sixty-three hearts beat after removing them from the bodies of persons who died. Of these, fifteen developed regular heart pumping mechanisms and

went on beating for an hour or more. With fifteen of the hearts Dr. Kountz had the lungs attached and these kept on beating outside the body for as long as four hours.

The hearts were taken from persons of all ages from babies born dead to an adult seventy-three years old. Hearts from persons who died of a chronic illness could as a rule be revived more easily than those from persons who died of acute infections. Hearts from tuberculosis patients were easiest of all to revive. Children's hearts responded more readily to Dr. Kountz' efforts than adults' hearts. Hearts from persons dying of heart disease were the hardest to start beating, with the single exception of the hearts from those who died of a heart ailment that was present when they were born.

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ASTRONOMY

Moving Giant Telescope Disk Provides a Problem

See Front Cover

LIGHT softly suffused through the great 200-inch disk for the world's largest telescope gave the photographer a rare opportunity to show its beauty.

The tricky problem of moving this important and delicate astronomical treasure from the Corning Glass Works in Corning, N. Y., to California, is giving engineers, scientists, and designers an unusual task. First protecting layers of felt and rubber, then a great sheet steel housing reinforced by steel beams, were part of the "crating" which alone weighed 15 tons. A specially constructed freight car was needed, and this attached to a special train.

For this unusual train, high speed will not be required nor desired. And as it slowly moves across the continent, instruments will record any unusual vibrations.

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HERPETOLOGY

St. Patrick Never Visited This Island of Japan

WHERE did the snakes go when St. Patrick, in the legend, drove them from Ireland? Maybe they went to Ireland's utter opposite, on the other side of the world off the coast of Korea. Although it is an ideal site for a lighthouse, the Japanese have left the island to its half-million venomous inhabitants.

This island belongs to the province of Kwantung, which, after the Russo-Japan war, was leased by Japan from China for a term of ninety-nine years. Small-Dragon-Mountain Island, as it is called, lies at the entrance to the Gulf of Pechili, eight nautical miles from the westernmost point of the province of the same name and twenty-three miles from Port Arthur.

In 1931, when an expedition of Japanese scientists was sent to Manchuria to study the natural resources of the country, Mr. Jumpei Sato, the biologist who led the party, was instructed to investigate Small-Dragon-Mountain Island as a possible site for a lighthouse. The investigators, although warned that the island was overrun with venomous snakes, were astonished at the snakes' paradise which they discovered.

The snakes belong to a species of moccasin not found in Japan. They are not swift in attacking human beings, preferring rather to escape. They are

so numerous that it is impossible for a person to walk even a few feet without encountering them, and they are easily captured by means of a forked stick. The island lies in the path of the migratory birds of Manchuria; and in migrating seasons those birds which stay their flight to rest here are devoured by the snakes, which wind their coils around the branches of bush and tree and wait for their prey. When quail or siskin or swallow are not to be had, these snakes live upon wild soybeans, maize, arrowroot, mugwort, etc.

While one member of the party was taking moving pictures of the snakes, another suggested that the only way to rid the island of them would be by burning off the brush. But this suggestion was quickly set aside, because of the Chinese respect for the snake as the "little one" of the serpent family, the "big one" being the dragon, the Chinese national emblem.

Still another reason for protection is that the snake is—and has been for thousands of years—the source, the raw material, from which patent medicines have been made in China and throughout the Orient; and it would be an insult to Nature's bounty to destroy wantonly such a valuable supply.

Dr. Shuji Hasegawa, director of the Bacteriological Institute of the Government Dental College in Tokyo, a member of the expedition, made a report concerning this island to the Biological Club of Nippon. He stated that the scientists who made the investigation have recommended to the Government that Small-Dragon-Mountain Island be set aside as a permanent paradise for the rare snake species.

Science News Letter, March 14, 1936

GEOLOGY

Smithsonian Collector Gets Meteorites from Chile

THREE iron meteorites, and a large fragment of a fourth, have been brought back from Chile by Mark C. Bandy, who has just returned from a collecting expedition for the Smithsonian Institution and Harvard University in the northern part of that country. The largest of the meteorites weighs 65 pounds.

In addition to the "irons that fell from the sky," Mr. Bandy has brought with him a considerable collection of mineral specimens of terrestrial origin, some of which are of previously unknown types.

*Science News Letter, March 14, 1936***IN SCIENCE**

ASTRONOMY

Astronomers Visit Harvard As Tercentenary Feature

HARVARD will attract astronomers from all over the world this summer as the result of the Harvard summer school of astronomy, Harvard's tercentenary celebration, and a meeting of the American Astronomical Society. During July, August and September visiting lecturers will include: Sir Arthur Eddington, Dr. Henry N. Russell of Princeton, Dr. Megh nad Saha of Allahabad, India, Dr. Antonie Pannekoek of Amsterdam, Dr. Knut Lundmark of Sweden, Dr. Frank Schlesinger of Yale, Dr. Paul W. Merrill of Mount Wilson Observatory, Dr. Peter van de Kamp of the University of Virginia, and Dr. Alfred C. Lane of Tufts.

Science News Letter, March 14, 1936

MEDICINE

Alcohol Injections and Diet for Heart Disease

INJECTIONS of alcohol into the nerves alongside the spine, removal of the thyroid gland and a diet of few calories are among the new methods of treating heart disease. These and many others were described by Dr. W. D. Stroud of Philadelphia at the meeting of the American College of Physicians.

Too often the heart is treated for symptoms that are brought on by disturbance of the sympathetic nervous system, Dr. Stroud pointed out. Doctors are finding more and more that prolonged constant antisyphilitic treatment is of definite value in preventing heart disease due to syphilitic infection.

As yet no vaccine has proved beneficial in arresting rheumatic heart disease, Dr. Stroud said.

Digitalis, nitroglycerin and rest continue to be standbys in treating certain forms of heart disease.

For the much-dreaded angina pectoris, Dr. Stroud said that a cheerful outlook, reassurance of the patient as to his condition, and a readjustment of his daily routine with mild sedatives continues to be beneficial.

Science News Letter, March 14, 1936

ENGINEERING

ENGINEERING

Dean Vannevar Bush Is Awarded Lamme Medal

FOR his development of automatic machines for solving intricate equations of higher mathematics, Dr. Vannevar Bush, vice-president of Massachusetts Institute of Technology and Dean of Engineering, has been awarded the Lamme Medal of the American Institute of Electrical Engineers.

The Lamme medal is awarded annually for "meritorious achievement in the development of electrical apparatus or machinery."

Dr. Bush's calculating devices include the differential analyzer, which can solve difficult equations of calculus the solution of which by ordinary means would take days. It takes the drudgery out of higher mathematics, and thus is proving of great value in engineering problems.

Science News Letter, March 14, 1936

PUBLIC HEALTH

Escape Meningitis By Avoiding Crowds

AVOID crowds and crowded sleeping quarters if you wish to escape meningitis, serious epidemic disease which is fairly common in many parts of the country right now.

This is the best and, in fact, just about the only advice health authorities can give on the prevention of the disease. There is no way of vaccinating against it.

Meningitis is caused by a "germ," the meningococcus, which may be carried in the throats of healthy persons. Patients suffering from the disease should of course be isolated, but there is no practical way of isolating the healthy, unknown carriers. So the isolation has to be reversed. In other words, the person who wants to escape the disease when there is much of it in his neighborhood should isolate himself as much as practical.

Here are the rules for protecting himself against meningitis during an epidemic:

1. Avoid crowds, particularly crowded sleeping quarters.

2. Avoid chilling, bodily fatigue and strain, particularly if you know you have been exposed to the disease.

3. Be especially careful as to personal cleanliness and of course don't use another person's handkerchief, towel or eating utensils unless they have been well washed before you use them.

4. Increase the separation of individuals and the ventilation in living and sleeping quarters for such groups of people as are especially exposed to infection because of their occupation or some necessity of living conditions. This applies especially to barracks, camps, ships and dormitories.

Science News Letter, March 14, 1936

MEDICINE

Nervous Breakdown Termed State of Mind, Not Body

SICKNESS in which the patient's mind and nerves are upset—a nervous breakdown, for example—is not an ailing condition like typhoid fever or tuberculosis but a state of mind, Dr. Louis Casamajor of New York City told members of the American College of Physicians.

Typhoid fever is something which has happened inside the patient's body. Nervous and emotional sickness, on the other hand, is something "which has happened to the relationship of the patient to the world in which he has to live," Dr. Casamajor explained. The patient suffering from such nervous sickness is up against a situation or influence in his life which he cannot take in his stride. So he becomes ill just as he would if a disease "germ" got him down.

The conflict between his instinctive urge for security or satisfaction of personal wants and the demands of civilized society makes him sick. Some of the factors which may cause this kind of sickness are the stress of war, of modern business competition, Dr. Casamajor said.

Another theory of the causes of such nervous sickness is that the patient is over-sensitive to either emotion or physical sensation such as pain. This view was presented by Drs. Austen Fox Riggs and Horace K. Richardson of Stockbridge, Mass. In treating such patients, these doctors try first to make the patient understand the cause of his nervous ailment—psychoneurosis is the technical term—and then to help him use this understanding of himself in learning how to live more efficiently.

Science News Letter, March 14, 1936

ASTRONOMY

New Minor Planet Anteros "Just Missed" the Earth

THE NEW-FOUND minor planet, now christened Anteros by its Belgian discoverer, Prof. E. Delporte, may be only the size of a small mountain but it relatively just missed the earth as it rushed by on February 7.

The chances are remote, but direct impact with the earth on a later visit cannot be ruled out.

"The chances that it will actually collide with one of the planets is, of course, remote, although eventually that might happen," declared Dr. Harlow Shapley, director of Harvard College Observatory, in an announcement describing the newest find of astronomy.

At its nearest distance to the earth Anteros was only 1,500,000 miles away, said Dr. Shapley. For a science like astronomy, which measures distances in billions upon billions of miles, such proximity is almost grazing the surface. Most minor planets never come within 50,000,000 miles of the earth; or more than thirty times as far away.

"Since the plane of Anteros' orbit is near the plane of the orbits of the four inner planets," declared Dr. Shapley, "the gravitational disturbance of its motion can be very great. Mercury, Venus, Earth, Moon and Mars all disturb the asteroid's motion. Eventually the object may be thrown into a very long orbit, with a long period, or even ejected from the planetary system."

Anteros has sped nearly 21,000,000 miles in the last three weeks.

Science News Letter, March 14, 1936

PHYSIOLOGY

Report Milk Protein Aids Rickets Prevention

A PROTEIN substance found in milk and called lactalbumin helps in the prevention of rickets, Dr. James A. Tobey, director of the health service of the Borden Co., reported at a Farm and Home Week meeting held at Cornell University.

The lactalbumin apparently does not have any rickets-preventing effect by itself, but when vitamin D is added to milk by irradiation with ultraviolet light, the dispersed lactalbumin increases the effectiveness of the vitamin's rickets-preventing power, Dr. Tobey explained. The discovery was made by Dr. George C. Supplee at Bainbridge, N. Y.

Science News Letter, March 14, 1936

EVOLUTION

Will Males Become Extinct?

Scientist Engulfed in Deepest Leap Year Gloom Paints Alarming Picture—But Things May Not Really Be So Bad

By DR. FRANK THONE

WILL MALES become extinct? Is the stronger sex becoming weaker? Are the strutting, dominating, high-crested lords of creation on the way out, on the sad road of no returning, which dinosaur and dodo have trod?

This question, raised in a recent address by Prof. David Causey of the University of Arkansas, started a bit of a stir. To be sure, the stir was to a considerable extent a stir of amusement, for Prof. Causey's paper was avowedly a "spoof."

The address was given before a biological honor society, Phi Sigma. The Phi Sigs are of the younger generation of scientists, so that they are able to relish a spice of fun on the solid meat of their learning.

Gloomed Prof. Causey, from a determinedly owlsh countenance:

"These are indeed times which try men's souls. We seem to be entering the twilight of masculinity. No longer do we find these brawny heroes of old, who, with mailed fist and two-handed sword, debated abstruse questions along the highways and byways of the world. These are no more crusades to the East to fight the mighty Saracens, no more quests in search of the Holy Grail; the last of the dragons, the Dragon Lizard of Komodo, is to be seen in some of our zoological gardens.

"As I glance shudderingly backward over the last quarter century I see strange and startling innovations which threaten our social organization and cause me to fear to look into the future.

Male Sanctuaries Invaded

"As I look backward I see the invasion of the old time barbershop by a silken horde. Swept before it went those prerequisites of masculinity—the huge and shining loving cups of brass which graced the floor, the dear old Police Gazette with its anatomical studies on the covers. Gone!

"I see a piratical assumption of that dearest of masculine attire—pants. And such pants—conceived in the disordered brain of a maniac and brought into real-

ity by a colorblind painter with a rainbow for a brush.

"Consider the situation of today: a poor man might be delivered, as a wee babe of course, by a woman doctor; reared and educated by female preceptors and school teachers; be shaved by a lady barber, have his teeth pulled by a feminine dentist, his clothes bought by his wife, his laws made by feminine legislators and argued in court by modern Portias; might work all his life for a captainess of industry; and at the end, after a lifetime of submission, be buried by a woman preacher."

If the discouraged human male turns to the other animals for comfort, he at first sees a little encouragement in such thumping specimens of masculine pre-eminence as the huge chest-beating gorilla, the bugling bull moose and the tough old ram of the mountains. But this is a deceptive consolation, for if he seeks further, especially in the lower orders of animals, there appear many and humiliating examples of disgracefully henpecked males, who have been in servance vile so long that they have got quite used to it—apparently even like it.

The Henpecked Ostrich

In many cases where actual parental care is bestowed upon the offspring, both sexes cooperate in the duties, Prof. Causey admitted. But in many other cases, he countered, the male has all of them thrust upon him. Perhaps most bird parents share the task of nest building, but in the case of the ostrich, the male has this task all by himself. True, it is but a mere hole scooped out in the sand, but it's the best the poor old fellow can do. It is the principle involved which is serious.

No doubt you have heard of the stickleback fish and the wonderful nest it makes, the professor continued. The poor male stickleback builds it all by himself, a marvelous little home of pieces of water weeds glued together with a glue his own little body provides.

"And when the little home is completed, does the female come gladly to lay her eggs and to brighten the little

home with domestic touches? No. She has to be driven in by threats and force. She even refuses to lay sufficient eggs and the poor little man needs must find other wives until at last by polygamous endeavors he gets his little egg basket filled.

"Does any one of the reluctant mothers ever pause to offer him aid in the care of the young, even so little as a word of advice as to their diet? Not a single one. The tiny babies are left to the clumsy mercies of the father."

The male stickleback is merely one of a long series of instances where the male is forced to take on all the parental care. Among birds are such examples as the Emu, of crossword puzzle fame, who sits alone for eight weary weeks while his wife goes in for whatever careering lady emus affect; the Kiwi of New Zealand, the Tintamou, the Rhea, and the Cassowary.

Males Are "Poor Fish"

Prof. Causey went on with his depressing catalog of male woes: "The female seahorse, or sea mare I presume one would call her, succeeds, by wiles and pretty tricks which I presume the feminine part of my audience thoroughly understand, in reducing the poor seahorse to a state of ecstatic anaesthesia and then deftly tucks the eggs into her husband's pocket. He is then abandoned to his paternal troubles. What she does while the henpecked father nurses the children is not common knowledge. All the seahorses' relatives appear to be treated as ignominiously. Invertebrate companions in such disgrace are such far apart forms as the giant water bugs and the sea spiders."

Male citizens of the watery world very commonly play the role of "poor fish," tending the family while Mama goes gadding. Among the examples cited by Prof. Causey are the common bullhead, the black bass, and the bowfin. More remote geographically are the rare lungfish of Africa, South America and Australia. Some male fish, like the gafftopsail cat of Gulf Coast waters, carry their eggs in their mouths until the young hatch, and even afterwards, while the babies are still too small to fight their own battles, Papa will open his wide mouth like a door of safety and welcome them back to the place where they were hatched, when danger threat-

ens. During the long weeks of incubation, the poor father fish cannot eat, for fear of swallowing his own offspring, like Saturn of old. Some of them actually starve during this heroic period of family care. Then the purpose of Nature is defeated, for the helpless unhatched fishlings perish too.

Forced to be Nursemaids

"I trust that these scattered examples will suffice to illustrate my first point that in so many cases the female avoids her natural duties and thrusts them upon her mate who becomes a mere nursemaid," Prof. Causey argued. "You may not agree that this is decadence—no doubt some of you because of sexual bias or inexperience will indignantly deny it. To those of wider experience I humbly submit that many a man's downfall began when a fair maid tied an apron around him and led him to the dishpan in the kitchen sink."

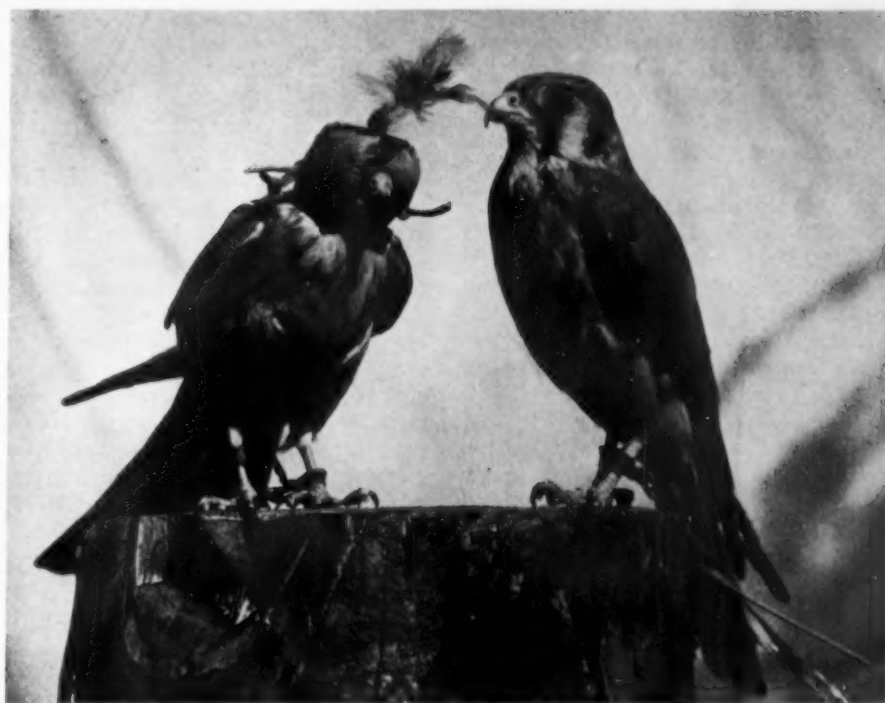
But mere male subservency only begins the catalog of male decadence. We are used to thinking of males as bigger than females, simply because that is the case with the animals with which we are most familiar, especially the mammals. But the mammals are by no means certain to continue their dominance of the earth—a dominance gained only a short time ago, geologically speaking. Among the other great group of warm-blooded animals, the birds, greater male size is by no means the rule. In many bird species, both sexes are of about the same size, and in some, such as the hawks, the female is as much as a third larger.

But it is when we venture down among the backboneless animals, the "creeping things" of the earth and the waters that are under the earth, that we find the female mighty and dominant, and the miserable little shrimp of a male amounting to nothing and getting nowhere. Sometimes the difference is not apparent at the start, but it soon makes itself unmistakably evident.

Male Termite Insignificance

Prof. Causey cited an insect example:

"Among the termites the sexes appear to get a fair and even start. They pair off after the swarming flight and start new societies where fate and chance permit. Then, slowly but surely, the male loses ground and becomes dwarfed into relative insignificance. We have a specimen of an African termite queen over four inches in length and with an abdomen as ponderous as that of the proverbial alderman. Her consort,



MIGHTIER MADAME

The female hawk (at right) is bigger by a third than the male (left, wearing falconer's hood.) Photo by John and Frank Craighead.

poor wretch, is a miserable little fellow not three-quarters of an inch long. In life he hovered tremblingly beneath that Gargantuan belly.

"Hegner states that in the silk spiders the female is always larger than the male, and tells of a tropical spider species in which the female is two inches long and the male a mere tenth of an inch in length."

Parasite Upon a Parasite

In human society, mere pity is the lot of the male who is smaller and weaker than his mate, whether in body or mind; but utter contempt is dealt out to the man who becomes a parasite upon a woman. Yet among the lower animals this extreme of decadence is by no means unknown. It is the normal thing in many worms which are themselves parasites on other animals. The female is a parasite, and the male a parasite upon her: that would seem to be about as low as a living being could get. Yet there is at least one step lower still, Prof. Causey indicated. There are even worms in which several males live permanently as parasitic inhabitants of the reproductive cavities of the females!

In the depths of the ocean occurs another shameful example of this melancholy condition of male parasitism. There are certain gaping-mouthed black fishes that live down there in the per-

petual dark, luring unsuspecting little fishes into the traps of their jaws with dangling, luminescent baits. Attached to them in a most literal sense are the males, attached to any part of the female's body, and attached for life. They have neither jaws nor teeth nor fins. They have degenerated to practically nothing but a set of male reproductive organs. The female fish may be more than three feet in length; the male a scant four inches. When naturalists first came upon these strange fishes they thought the attached males were simply odd body growths or appendages. Only when they cut them open did they find out what they were.

Not Even Biologically Necessary

Reduction to midget parasitism is not the end of the Decline of the Male. In some orders of animals he serves his biological purpose and then dies, or even gets killed and eaten; in other groups he is simply dispensed with as not even biologically necessary, for many generations in succession.

Perhaps the most common example of the male who dies when his contribution to the next generation has been made is found among the bees. At the end of the drone's mating with a queen, his sex organs are torn from his body, and he falls mangled and dying to the ground. The surviving drones, unmated,

hang around the hive in unproductive idleness until frost threatens in autumn. Then their cross spinster sisters, the workers, either sting them to death or drive them out of doors to freeze.

In other cases, the male, having made progeny biologically possible, contributes also to making it physiologically possible: the female first accepts him for a mate, then eats him.

"Possibly you will recall the mating promenade of the scorpion," said Prof. Causey. "How coy and passive the female is as the male clasps her claw-like

hands and leads her about in a weird dance. At the conclusion of the dance, they retire to some secluded spot, a hole in the ground or under a stone.

"Some time later the female comes out—alone."

Certain spiders are guilty of the same kind of mate-murder, with a grisly banquet afterwards, unless the terrified male can get away fast enough. The Black Widow was accused by Prof. Causey of being a self-made widow.

At the last end of male decadence is male disappearance. Many insects, as well as lowlier and less familiar animal forms that live in the water, produce eggs or living young from virgin females, for generation after generation. In some species, no male individual has ever been found, though females swarm by millions. The common little green insect pest, the plant louse or aphid, pro-

duces only females all summer long, but when frost is near condescends to have a few sons. These mate with the daughters, and of these unions tougher eggs are born, that will survive winter—why, no one knows. But so long as times are good, these Adamless Eves seemingly want no males around, disturbing their green Eden.

Yet, after drawing up this pessimistic picture of the decadence of the male, Prof. Causey declined to make an outright prediction that males will disappear from the world altogether. "But I wonder," he concluded, "in those days of long ahead, will your daughters and my daughters some day point with amusement, in some great museum, to the beautifully preserved specimen of the last man, standing alongside the Great Auk and the Dodo? I wonder."

Science News Letter, March 14, 1936

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PHYSICS-MEDICINE

Method for Decreasing X-Ray Burns Developed in New York

A NEW method of decreasing materially the dangerous X-ray burns which have long been a hazard in the treatment of cancer and other malignant growths by these piercing radiations was described before the meeting of the American Physical Society by Dr. G. Failla, chief physicist of Memorial Hospital of New York.

One possibility of the new method is that better treatment of deep-seated cancers will be achieved, according to Dr. Failla, because the present limitation of the amount of radiation which can be given a patient is determined by the burning power of the rays on the skin. Any method to reduce the skin burning from X-ray will allow more potent radiation treatment.

Dr. Failla, long known in this country for his basic contributions to medical X-ray therapy, told how he is now cutting out much of the secondary electrons which are an essential part of any X-ray beam. It is these charged particles of electricity which actually split apart the atoms of the skin and produce ionization in them. It is the ionization which causes the skin reddening and damage even though seemingly adequate protection is afforded by heavy shields of lead.

The lead shield, Dr. Failla points out, protects other parts of the body than

the point where the radiation is desired but, of necessity, the opening for the X-rays allows any electrons also in the beam to come through.

Dr. Failla's new method takes advantage of the fact that when electrons strike matter they are deflected at large angles. By setting up a system of baffles or stops a beam of X-rays containing only the desired gamma ray type of radiation can be attained. The deflected electrons are caught by the baffles along the X-ray beam path. The useful radiation of the gamma type goes through the holes in the baffles undisturbed.

"The advantage of the use of X-ray beams stripped of secondary electrons," said Dr. Failla, "is apparent in X-ray therapy, since the ionization in the skin and the consequent damage are materially reduced."

While present work with the method is confined to energy ranges around 250,000 volts, the adaptation necessary to extend the method to X-ray tubes of more than 1,000,000 volts was described by the cancer therapy authority.

The new baffle method is a simpler device for obtaining results which now can only be attained by the use of electric and magnetic fields that will deflect aside the electrons as they come along the X-ray beam.

Science News Letter, March 14, 1936

PUBLIC HEALTH

Meningitis Increasing Fast in United States

A STEADY increase in cases of meningitis, with no signs of any let-up, is worrying health officers all over the country. Health authorities do not like to hazard any predictions but they believe cases of the disease will continue to increase.

The increase seems to have started just a year ago. Reports from state health officers to the U. S. Public Health Service show that the number of cases in the country last year were more than double the number for the preceding year. Reports for the current year indicate that there are now double the number there were last year.

Latest figures available are for the week ending Feb. 29, 1936. There were 307 cases during that week. The cumulative figures are impressive. For the first six weeks of 1935 there were 539 cases, and for the first six weeks of 1936 there have been 998 cases. The total number of cases in 1935 was 5,583. The total in 1934 was only 2,295. At the same rate, there will be over 10,000 cases during the current year.

The meningitis now so prevalent in the country is caused by a "germ" called the meningococcus. There is a serum for use in treating the disease which is fairly successful. Preventing the disease, however, seems to depend on isolating the patients and on avoiding crowded living conditions, especially crowded sleeping quarters.

Starts With Chill

The disease starts very suddenly with a severe chill, headache, fever, explosive vomiting and finally stiffening of the neck. A physician should be called at once and his advice acted on immediately.

Most people, fortunately, are not susceptible to the disease, but an unfortunate feature is the fact that these insusceptible persons can carry the germs without knowing it and it is in this way, chiefly, that the disease spreads.

Control of meningitis, Dr. Adolph Weinzirl of the Baltimore City Health Department says, is probably a matter of remedying economic conditions responsible for large numbers of persons living and sleeping under very overcrowded conditions.

No one knows why the disease has increased so markedly in the last year.

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Which of these sciences are YOU most interested in?

These six books are NEW PLAN texts at the University of Chicago, adopted in many other schools for class instruction, and also



read widely by the non-academic public for their unusually interesting presentation of the sciences.

HIGHLIGHTS OF ASTRONOMY

by WALTER BARTKY

Since Hipparchus made the first charts of sky and earth twenty centuries ago, men have been searching the heavens in an effort to determine the nature of the universe, its history, its future. . . . This book explains the phenomena of astronomy and interprets it in the light of everyday experience. Easily understood charts enable even a tyro to follow the stars and the planets not only through the present, but into the past and future centuries, without the use of mathe-

matics. 280 pages, illus. Text edition, \$2.50; trade edition \$3.00; postpaid \$3.15.

THE STELLARSCOPE is an ingenious device which makes it easy to locate and identify stars and constellations, with 24 sky maps on motion picture film, illuminated and magnified. Made of bakelite, with chromium-finish flashlight. \$2.00; postpaid \$2.10.

A MATHEMATICIAN EXPLAINS

by MAYME I. LOGSDON

This book is an eye opener for everyone who has a healthy curiosity concerning this basic science. "This book can be highly recommended," says *The Scientific Book Club Review*, "for those who wish to acquaint themselves with the fundamental ideas underlying mathematics . . . and perhaps equally to those who have familiarized themselves with the fields of mathematics

and would enjoy learning something of their historical background and their current applications." Illustrated with many line drawings. First edition exhausted. New edition ready March 17 with added chapter on *Mathematics and Life*. Text edition \$1.75; Trade edition \$2.50; postpaid \$2.60.

FROM GALILEO TO COSMIC RAYS

by HARVEY BRACE LEMON

This "new look at physics" has aroused extraordinary enthusiasm from press, public and educational world. The *New Republic* calls it "An extraordinary and notable volume, a 'textbook' on one of the most abstruse of the sciences that can actually be read, enjoyed and depended upon." And the *Scientific Book Club Review*

comments that it leaves the reader with "a maximum of enlightenment and a minimum of bewilderment." 450 pages, illustrated with hundreds of amusing drawings by Chichi Lasley and 50 stereo-photographs. Text edition, \$3.75; postpaid, \$3.90; Stereoscope \$0.75. Trade edition, boxed, with stereoscope, \$5.00.

THE STORY OF THE PLANT KINGDOM

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**EXPLORING IN PHYSICS**

by Reginald J. Stephenson. "Companion volume to *From Galileo to Cosmic Rays* . . . uses the same style of clever illustration and make-up but concentrates on examples and problems." — *Science News Letter*. Paper-bound. \$1.50; postpaid \$1.60.

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•First Glances at New Books

Anthropology

A HUNDRED YEARS OF ANTHROPOLOGY—T. K. Penniman—*Macmillan*, 400 p., \$4.50. A panoramic view of the science of man, which looks briefly back at the Greeks and other early seekers after knowledge of mankind, and forward at the future work in this science. Most of the book, however, takes stock of advances in the past century in understanding of races, customs, physical traits, evolutionary changes, psychology, and other aspects of man's development. The author is Secretary of the Committee for Anthropology in the University of Oxford.

Science News Letter, March 14, 1936

Physics

SOUND—Floyd Rowe Watson—*Wiley*, 219 p., \$2.50. Here is a simple text on sound which is deserving, also, of a place on shelves of those who chronologically are beyond the possibility of studying it in college. The author is one of the authorities in the field, professor of experimental physics at the University of Illinois and editor of the *Journal of the Acoustical Society of America*. Segregation of the mathematical portions, simple as they are, from the descriptive matter allows students in music and psychology to use the book.

Science News Letter, March 14, 1936

Chemistry

ORGANIC CHEMISTRY—F. Sherwood Taylor—*Chemical Publ. Co.*, 587 p., \$6. A British text by the assistant master of the Repton School, with emphasis on cyclic compounds as the keynote of the carbohydrates. Considerable detail is given for the premedical student in the treatment of alkaloids and proteins.

Science News Letter, March 14, 1936

Engineering

THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS GUIDE 1936, FOR HEATING, VENTILATING, AIR CONDITIONING—*American Society of Heating and Ventilating Engineers*, 1080, 63 p., fold. chart, \$5.

Science News Letter, March 14, 1936

Archaeology

SOKNOPAIU NESOS—The University of Michigan Excavations at Dimê in 1931-32—Ed. by Arthur E. R. Boak—*Univ. of Michigan Press*, 47 p., 12 plates, 16 plans, \$2.50. The Michigan

expedition for one season shifted its work in Egypt from ancient Karanis to a nearby Ptolemaic town dominated scenically by a temple to the crocodile god of the Fayum. The levels unearthed did not parallel those of Karanis, and, as archaeological returns were not highly important, though interesting, work at Dimê has not been continued.

Science News Letter, March 14, 1936

Psychology

ESSENTIAL TRAITS OF MENTAL LIFE—Truman L. Kelley—*Harvard Univ. Press*, 145 p., \$2.75. *Harvard Studies in Education*, Volume 26. An important book for those interested in the mathematical study of personality. Not written for the layman, nor even for the non-mathematical psychologist.

Science News Letter, March 14, 1936

Radio

THE RADIO AMATEUR'S HANDBOOK—*American Radio Relay League*, 472 p., paper binding, \$1.; buckram binding, \$2.50. New edition of the handbook of amateur radio communication which is the "Bible" of its field. It is twice as large as the last edition and completely rewritten.

Science News Letter, March 14, 1936

Education

INTRODUCTION TO EDUCATION (New Edition)—F. L. Clapp, W. J. Chase and Curtis Merriman—*Ginn*, 569 p., \$3. Suitable as a textbook and of interest to prospective teachers and others who wish a broad knowledge of the history and administration of education.

Science News Letter, March 14, 1936

Mathematics

DESCRIPTIVE GEOMETRY—Frank W. Bubb—*Macmillan*, 234 p., \$2.50. A college text which, the author claims, breaks with traditional methods of presentation. The usual difficulty with descriptive geometry, as Prof. Bubb sees it, is that the student has to draw in two dimensions but think in three. Often the course is nearly finished before this realization comes and the subject becomes easy. The text is designed to bring the "crisis" in the first few weeks.

Science News Letter, March 14, 1936

Ornithology

OCEANIC BIRDS OF SOUTH AMERICA—Robert Cushman Murphy—*American Museum of Natural History*, 1245 p. (2 vol.), 14 colored plates, 72 halftone plates, \$10.50. A most sumptuously gotten up work, that assembles in one place a great mass of information hitherto inaccessible because scattered or unavailable because unpublished. Not only are there the accurate and detailed natural histories of the various species which one may expect in an undertaking of this kind, but there are careful examinations of geographical and ecological factors that bear on bird life of the regions, such as winds, ocean currents, food supplies, life barriers, and so on. There is a 31-page bibliography.

Science News Letter, March 14, 1936

Ethnology

CULTURE ELEMENT DISTRIBUTIONS: I. The Structure of California Indian Culture—Stanislaw Klimek—*Univ. of Calif. Press*, 70 p., \$1. A statistical study, based on over 400 traits, which provides a quantitative survey of the culture of 60 California tribes.

Science News Letter, March 14, 1936

Chemistry

INORGANIC AND THEORETICAL CHEMISTRY—F. Sherwood Taylor—*Chemical Publ. Co.*, 832 p., \$6. A voluminous British text containing two concurrent courses; large type makes a first year college course while reading of large plus small type is required of second year students.

Science News Letter, March 14, 1936

Biology

THE PHENOMENA OF LIFE—George Crile—*Norton*—379 p., \$3.50. This book presents in some detail Dr. Crile's investigations supporting his radio-electric theory of life. While the book is probably not too technical for lay reading, the layman should remember that the theory, although enticing, has not been accepted by scientists generally.

Science News Letter, March 14, 1936

Aeronautics

GLIDING AND SOARING—C. H. Latimer-Needham—*Scribner's*, 255 p., \$2. Newest addition to the Sportsman's

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Library series. Written from the British viewpoint, the book describes elementary aerodynamics, glider control and rigging systems, elementary and advanced training, soaring, sailing and tow launchings. The material on glider maintenance and repair is not often found in similar books.

Science News Letter, March 14, 1936

Archaeology-History

YALE CLASSICAL STUDIES, Vol. 5—Ed. by Austin M. Harmon—Yale, 304 p., 3 plates, 85 figures \$3. Four monographs make up this volume. C. W. Mendell describes the dramatic construction that the historian Tacitus effectively used. D. E. W. Wormell brings together the literary evidence on Hermias, tyrant of Atarneus, who figured in international affairs in the time of Philip of Macedon. A. R. Bellinger and C. B. Wells discuss a third century contract written on leather in which the sale of a slave girl is arranged. And M. I. Rostovtzeff tells the significance of the Parthian art which has come to light at the ruins of Dura on the Euphrates.

Science News Letter, March 14, 1936

Radio

RADIO, THE STORY OF THE CAPTURE AND USE OF RADIO WAVES — John Langdon-Davies—Dodd, Mead & Co., 278 p., \$2.50. A simply told story of how a radio works, including more than the usual amount of straight electrical background. Boys and girls of the high school age who want information will read it from cover to cover and enjoy the illustrations and interesting historical material.

Science News Letter, March 14, 1936

City Planning

BIBLIOGRAPHY OF PLANNING, 1928-1935—Katherine McNamara—Harvard Univ. Press (Harvard City Planning Studies, Vol. X), 232 p., \$3.50.

Science News Letter, March 14, 1936

History

THE MAKING OF MODERN IRAQ—Henry A. Foster—Univ. of Oklahoma Press, 319 p., \$4. Iraq—roughly speaking, old Mesopotamia—stands independent today as a new state of three million people, and a member of the League of Nations. The story of the races and factions, and of the land, is well told in this volume with special emphasis on recent history to show how the present situation has developed, and its strategic and economic significance in world affairs.

Science News Letter, March 14, 1936

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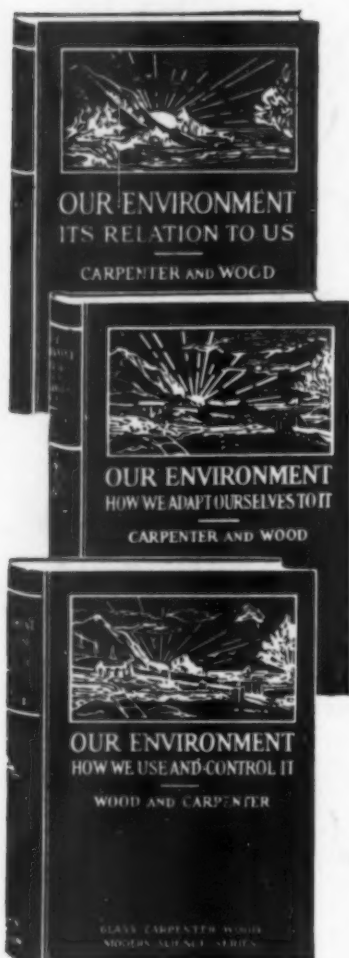


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SOCIAL RESPONSIBILITY

"PHILOSOPHY begins in wonder" is as true today as when Plato used these words.

The wonders of science are a bridge to a true philosophy of life. Tested truths and scientific thinking produce these wonders. They produce also tolerance—the withholding of judgment until the facts are determined—distrust of all superstition and of all conclusions which are not based on carefully determined facts.



It is easy to understand why children begin first to wonder, then to think straight, then to develop a true philosophy which influences their conduct, when they study the simple laws and principles which have developed the railroad, the telephone, the radio which brings the whole world within earshot just by the turn of a knob, the airplane with which we cross the continent overnight.

What events in history are as important as the great scientific discoveries of the past made in the midst of religious intolerance and social unrest, occupying a much smaller place in history than this intolerance and unrest but outweighing both in importance and indeed contributing toward putting an end to both?

Four thousand children studying science selected the following as the ten most important results of science: electricity, radio, pasteurization, telephone, anesthetics, vaccination, medicine, X-ray, modern transportation, purification of water.

The study and investigation of these children has helped them to think straight. So, in ever-increasing measure, science contributes abundantly to right thinking and conduct. As our children share in its teachings, we may expect them to learn increasingly those principles of open-mindedness and unselfish service which will make them tolerant and responsible members of society.

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